

Power Soccer Playbook

**An Honors Thesis (HONR 499)**

**by**

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## **Abstract**

This creative project is a prototype of a power soccer playbook application to run on any iOS device, but primarily developed for use with the Apple iPad. The target audience for this application is people involved with the sport of power soccer. The power soccer playbook application allows the user to draw plays and run them to show how the play should look in action.

**Acknowledgements:**

I would like to thank my advisor Fu-shing Sun for helping me start my project and for helping me stay on schedule.

**Author's Statement:**

What was my creative project?

For my creative project, I developed a prototype of an interactive power soccer playbook application. The application prototype was developed to run on any iOS device, but specifically for use on the Apple iPad. I not only chose this creative project to create an application prototype, but also to learn a new programming language and in doing so, use an integrated development environment (IDE) I was unfamiliar with. I had no prior experience programming in the programming language Objective-C or using the Xcode IDE, which are both necessary to develop iOS applications. This creative project was initially intended to be an application but was changed it to a prototype; the major difference being that a prototype does not necessarily run perfectly and is not published. Because I had a time constraint and needed to learn the basics of using Objective-C and Xcode, I decided it was best to develop this creative project as a prototype that can be developed further into an iOS application in the future.

As I have stated, this creative project is a prototype of an interactive power soccer playbook, with the primary objective of drawing and displaying plays for the sport of power soccer. Power soccer is the only sport specifically created for power wheelchair users; it is an adaptive form of soccer played on a standard basketball court with power wheelchairs. As a sport, power soccer requires different plays for different situations, so playbooks do exist but generally as a static representation on paper. The iOS prototype is interactive because it allows the user to move the ball and players to different positions on the court. It also allows the user to draw the path they would like the ball to follow in the play by tapping a point on the screen where they want a line to connect to, starting from the ball. Each time the screen is tapped, the line extends from its current endpoint to the point that was tapped on the screen and can be done

as many times as the user wants (Figure 2, Figure 3, and Figure 4). After the user has the players and ball positioned and has drawn the line for the path of the ball, the user taps a button that allows the ball to animate (Figure 5). The animation causes the ball to move along the drawn path (Figure 5, Figure 6, and Figure 7). The figures below are screenshots that demonstrate the prototype working as described above:

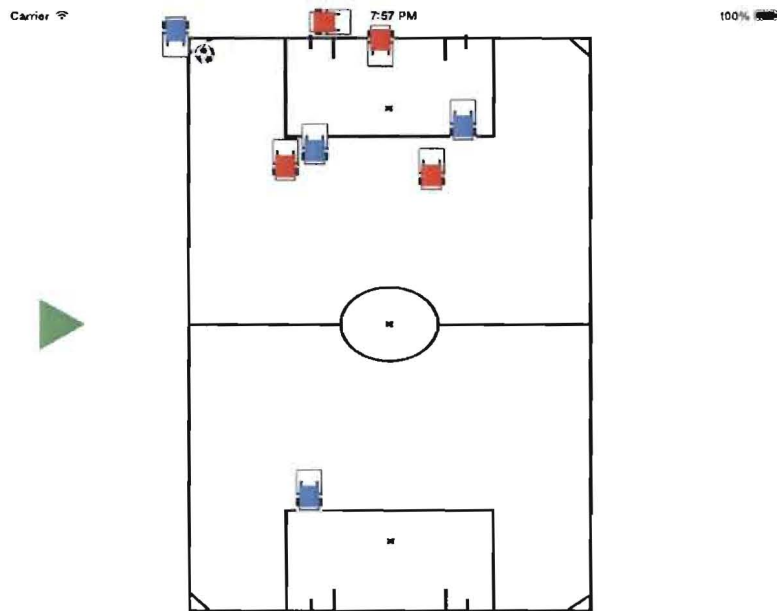


Figure 1: The initial position of players and ball when running prototype.

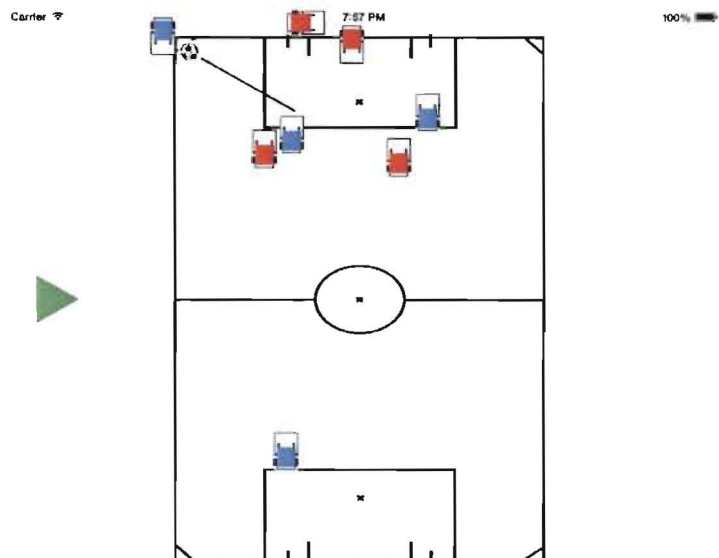


Figure 2: Line drawn from ball to the first point tapped on the screen by user.

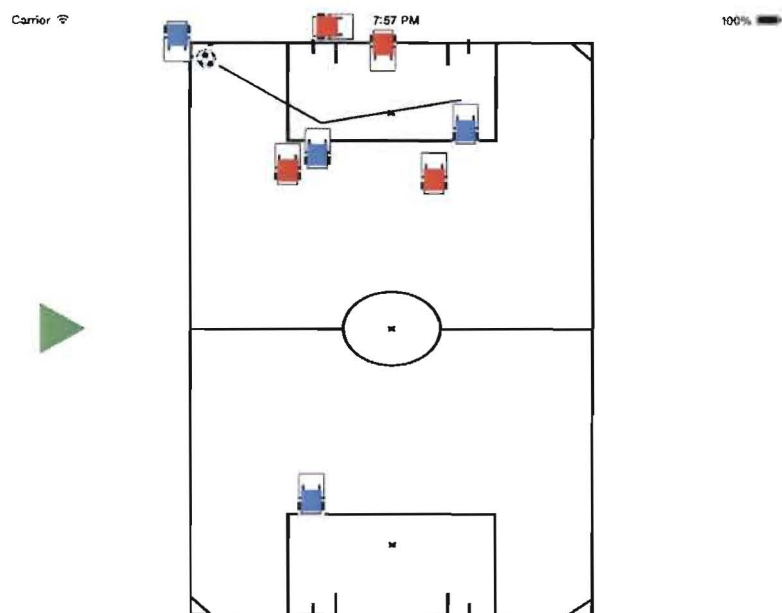


Figure 3: Line extends to the point of the second tap of the user.

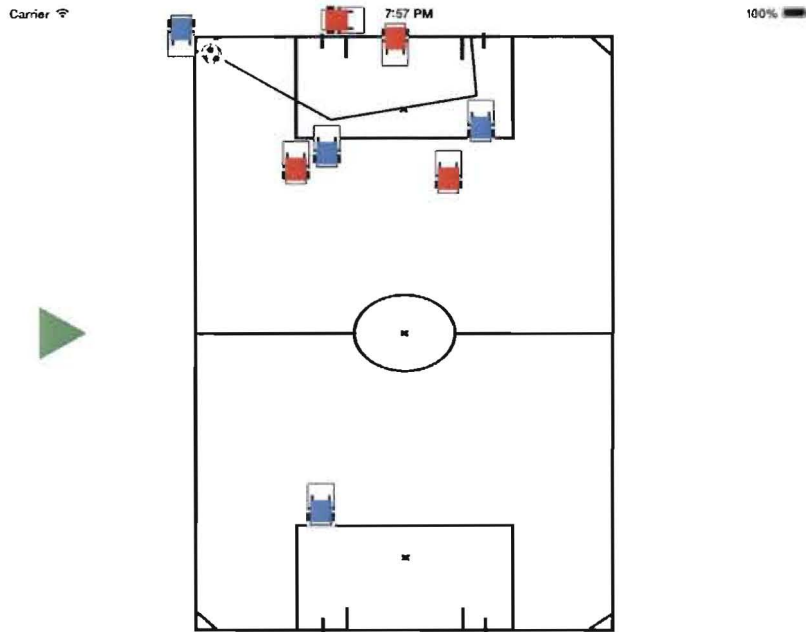


Figure 4: Line extends to the point of the third tap of the user.

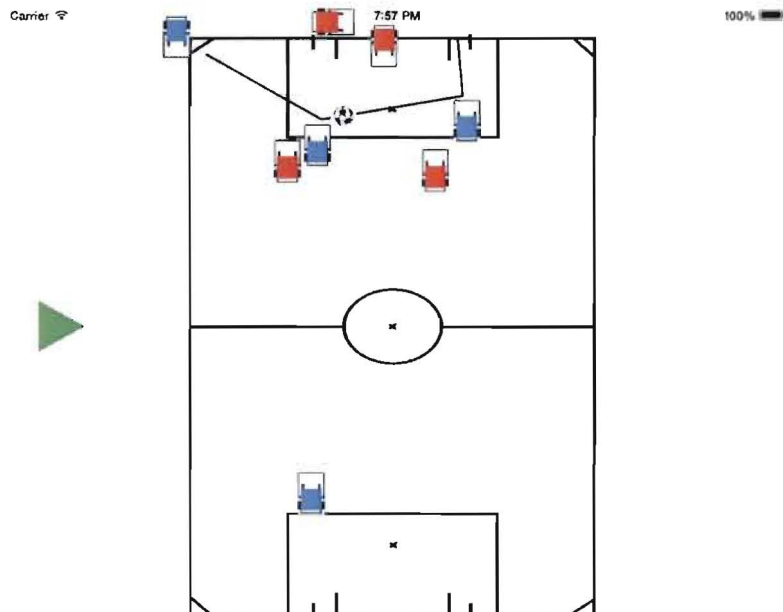


Figure 5: Green play button touched, causing ball to begin animating along the path of the line.

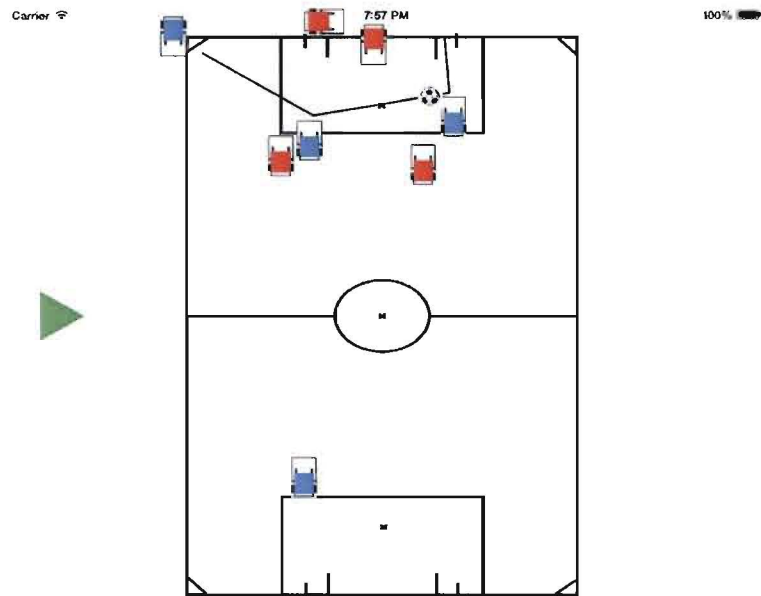


Figure 6: Animation of ball continues.

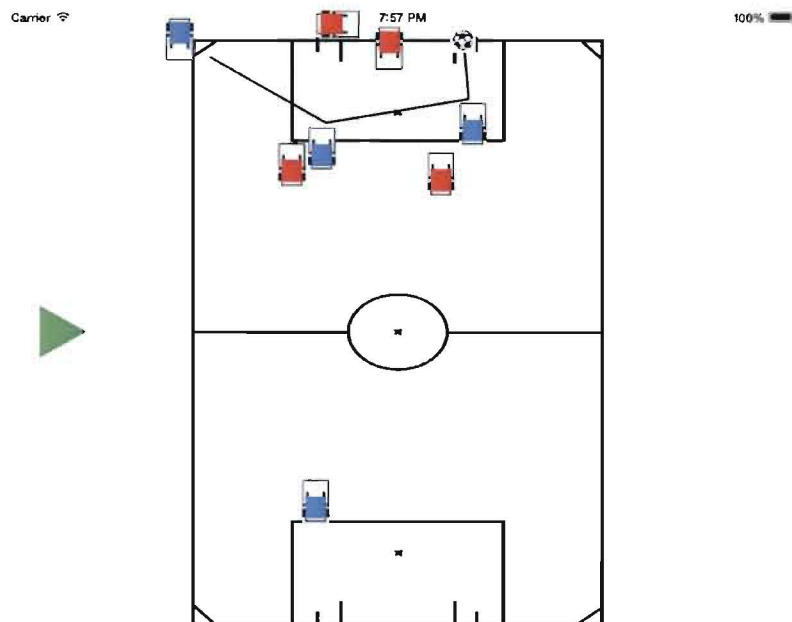


Figure 7: Animation finishes and the ball stops at end of line.



Why did I do what I did?

I chose this creative project because as a Computer Science student I was interested in developing a computer program of some sort that utilized my knowledge of programming. Another major focus of mine is playing power soccer, which has been a passion of mine for many years and in which I currently compete at for the Ball State Power Soccer Club. So I decided to combine my two primary interests to create an interactive power soccer playbook. I felt that creating an interactive playbook would be an improvement over having plays recorded on many pieces of paper and it may help people to visualize the ball movement in a play. Having the program run on a tablet means that the playbook would be portable and every play would be stored in one place, also making it easy to create plays.

Part of my inclination to develop a program for my creative project was to learn a new programming language in the process. I thought it would be good practice to quickly learn a new programming language because I may need to quickly learn a new language or other technology quickly when I am working as a developer. I also wanted to challenge myself and use skills I have learned throughout my time in the Computer Science department by learning a new programming language under time constraints. For this reason, I decided to develop the prototype for the iOS operating system instead of the Android operating system because Android development is primarily done using the programming language Java, but I am already very familiar with Java and wanted to force myself to program using an unfamiliar programming language. Applications for iOS are developed in the Objective-C programming language so I decided to develop for iOS.

## **Reflection**

Throughout the process of completing this creative project, I feel that I have succeeded in the objectives I set for myself. I have completed a working iOS application prototype that can be further developed into a full application that can be downloaded and used by members of the power soccer community. It has been a great challenge to complete this project as it took some time to become comfortable with the Xcode IDE and the Objective-C language. I not only had to learn the basic syntax of Objective-C but also how to add functionality I was unfamiliar with. By the end of the development of the Power Soccer Playbook prototype I began to have a strong understanding of the language and IDE. In the future I know that I can more easily develop iOS applications and learn to use new technologies that I will need to use in my career.

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